

What is claimed is:

1. A method of performing a chemical vapor deposition process comprising:
cleaning a process chamber by introducing a cleaning gas into the process chamber through a cleaning gas supply line;
loading a wafer into the process chamber after said cleaning; and
depositing a film on the wafer by introducing a deposition gas into the process chamber, while preventing the deposition gas from flowing back toward the cleaning gas supply line.
2. The method as claimed in claim 1, wherein during said depositing, a back-flow preventing gas is introduced into the process chamber through the cleaning gas supply line to prevent the deposition gas from flowing back toward the cleaning gas supply line.
3. The method as claimed in claim 2, wherein the back-flow preventing gas is at least any one selected from a group consisting of nitrogen, argon and helium.
4. The method as claimed in claim 2, wherein a flow rate of the back-flow preventing gas is at a ratio of 30 to 100 % with respect to a flow rate of the deposition gas.

5. The method as claimed in claim 1, wherein the cleaning gas is a gas including a fluorine radical which is generated by exciting NF_3 gas at an exterior of the process chamber before said cleaning.

6. The method as claimed in claim 1, wherein the cleaning gas includes an active gas and an inert gas as a carrier gas for carrying the active gas.

7. The method as claimed in claim 6, wherein the inert gas is at least any one selected from a group consisting of nitrogen, argon and helium.

8. The method as claimed in claim 6, wherein the back-flow preventing gas is introduced into the process chamber through the cleaning gas supply line to prevent the deposition gas from flowing back toward the cleaning gas supply line, the carrier gas being the same as the back-flow preventing gas and being supplied from a same source.

9. The method as claimed in claim 6, wherein the back-flow preventing gas is introduced into the process chamber through the cleaning gas supply line to prevent the deposition gas from flowing back toward the cleaning gas supply line, the carrier gas being different from the back-flow preventing gas and being supplied separately from a gas source that is different than a back-flow preventing gas source.

10. The method as claimed in claim 1, wherein after said cleaning, the deposition gas is introduced into the process chamber before said loading, to pre-coat a film on inner sidewalls of the process chamber.

11. The method as claimed in claim 10, wherein the back-flow preventing gas is supplied into the process chamber through the cleaning gas supply line while the deposition gas is being introduced into the process chamber.

12. The method as claimed in claim 1, wherein during said depositing, a connector which connects the cleaning gas supply line to the process chamber is closed to prevent the deposition gas from flowing back toward the cleaning gas supply line.

13. The method as claimed in claim 12, wherein after said cleaning, the deposition gas is supplied into the process chamber before said loading, so as to pre-coat a film on inner sidewalls of the process chamber.

14. The method as claimed in claim 13, wherein the connector is closed while the film is pre-coated on the inner sidewalls of the process chamber.

15. An apparatus for carrying out a chemical vapor deposition process

comprising:

a process chamber in which a chemical vapor deposition process is carried out;

a cleaning gas supplier that supplies a cleaning gas;

5 a plasma device that excites the cleaning gas supplied from the cleaning gas supplier;

a deposition gas supplier that supplies a deposition gas to deposit a film on a wafer;

10 a mixer that mixes gases supplied from the cleaning gas supplier and the deposition gas supplier, and that supplies the mixed gas to the process chamber; and

a flow back preventer that prevents the deposition gas from flowing back toward the cleaning gas supplier.

16. The apparatus as claimed in claim 15, wherein each of the cleaning gas supplier and the deposition gas supplier include gas supply parts that supply gas, a gas supply line for guiding the gas supplied from the gas supply parts, and switching valves installed between the gas supply parts and the gas supply line so as to control flow
5 rate of the gas.

17. The apparatus as claimed in claim 15, wherein the flow back preventer comprises:

an inert gas supply part that supplies an inert gas;

an inert gas supply line that guides the inert gas to a gas supply line of the

5 cleaning gas supplier; and

a switching valve installed between the inert gas supply part and the inert gas supply line to control a flow rate of the inert gas.

18. The apparatus as claimed in claim 15, wherein the flow back preventer comprises a switching valve installed between the cleaning gas supplier and the mixer.

19. The apparatus as claimed in claim 18, wherein the switching valve is automatically closed when the deposition gas is supplied to the process chamber by the deposition gas supplier.

20. The apparatus as claimed in claim 15, wherein the cleaning gas comprises a fluorine radical.